

### REMARKS

This is in response to the Office Action dated January 26, 2006. In view of the foregoing amendments and following representations, reconsideration is respectfully requested.

To further facilitate the Examiner's reconsideration of the application, original claims 1-3 have been canceled and replaced with new claims 4-13. Each of the new claims has been carefully drafted to ensure compliance with the requirements of 35 U.S.C. § 112, second paragraph.

On page 2 of the Office Action, the Examiner indicates that Fig. 11 should be designated by a legend such as "Prior Art." Accordingly, a corrected drawing is submitted herewith in order to provide the legend "Prior Art." Note that the drawing is labeled "Replacement Sheet" as per 37 CFR 1.84(c).

Next, on pages 2-4 of the Office Action, claims 1 and 3 are rejected under 35 U.S.C. 102(e) as being anticipated by Mathieu (U.S. Patent No. 6,685,817). Also, claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mathieu in view of Zhao et al. (U.S. Patent No. 5,660,706). It is submitted that the present invention, as embodied by the new claims, now clearly distinguishes over the Mathieu and Zhao references for the following reasons.

New independent claim 4 requires, *inter alia*, immersing the surface to be plated into an electroless plating treatment liquid in a plating chamber in such a state that the substrate is inclined at a certain angle with respect to a horizontal plane so as to remove gas generated on the surface to be plated. This particular positioning of the substrate surface causes the gas generated at the lower surface to ascend along the inclined surface of the substrate and be removed.

**Mathieu** discloses a plating method which includes directing a surface of a substrate 64

to be plated downwardly. However, Mathieu does not disclose or suggest inclining the substrate 64 at a certain angle with respect to a horizontal plane.

**Zhao** discloses tilting a wafer 19 at an angle  $\alpha$  from an E-field line 30 vector (see col. 5, lines 52-54; Fig. 1). However, Zhao merely discloses that the wafer 19 is positioned in a container 29 in such a state that the wafer 19 is tilted at an angle  $\alpha$ . Clearly, the Zhao reference lacks any disclosure or suggestion of immersing the wafer 19 in a solution 21 with the wafer 19 inclined at a certain angle with respect to a horizontal plane.

In the rejection of original claim 2, the Examiner states that:

*“Zhao teaches that when applying the electric field it is beneficial for the wafer to be tilted and rotated so that the negative charges are moving continuously along the surface and not collected into isolated pockets (column 8 lines 36-56).”*

However, claim 4 requires immersing the surface to be plated into an electroless plating treatment liquid in a plating chamber in such a state that the substrate is inclined at a certain angle with respect to a horizontal plane so as to remove gas generated on the surface to be plated. Note that apparatus 20b of Zhao is a shower device (see col. 6, lines 10-14).

Further, it is noted that the substrate in Zhao is tilted for the purpose of causing movement of charges of opposite polarity distributed along the surface of the wafer 19 so as to achieve a more uniform deposition of a metallic material (see claim 3 of Zhao). In contrast, in the present invention, as defined in claim 4, the substrate is inclined in order to remove gas generated on the surface to be plated. Accordingly, it is submitted that the present invention, as defined in claim 4, clearly distinguishes over the teachings of the Mathieu and Zhao references

taken alone or in combination.

New independent claim 9 requires, *inter alia*, flowing an electroless plating treatment liquid as a laminar flow along a quadratic curved surface of a plating chamber so as to remove gas generated on the surface of the substrate to be plated. This arrangement is shown in Fig. 2 for example (see page 15, lines 5-13).

The Mathieu apparatus includes a bucket 76 having flat inner surfaces. Further, as is apparent from the drawings in the Mathieu reference, the plating solution is supplied upwardly from a nozzle 104 provided at the center of the bucket 76. Similarly, the Zhao apparatus includes a container 29, which has flat inner surfaces. The solution 21 is supplied from an inlet 25 provided at an upper portion of the container 29.

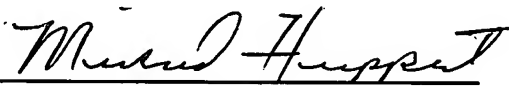
Thus, it is apparent that neither Mathieu nor Zhao teaches or suggests flowing an electroless plating treatment liquid as a laminar flow along a quadratic curved surface of a plating chamber which spreads upwardly and outwardly so as to remove gas generated on the surface to be plated. Accordingly, it is submitted that claim 9 is clearly allowable over the collective teachings of the Mathieu and Zhao references.

In view of the above, it is submitted that the present application is now clearly in condition for allowance. The Examiner therefore is requested to pass this case to issue.

In the event that the Examiner has any comments or suggestions of a nature necessary to place this case in condition for allowance, then the Examiner is requested to contact Applicant's undersigned attorney by telephone to promptly resolve any remaining matters.

Respectfully submitted,

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